

ICPER 2008

International Conference on
Plant Equipment and Reliability

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Burhanuddin



*Engaging Research and Technology
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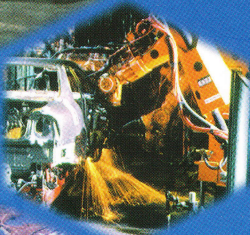
Plant Equipment



Plant Reliability



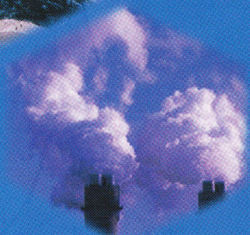
Maintenance Engineering



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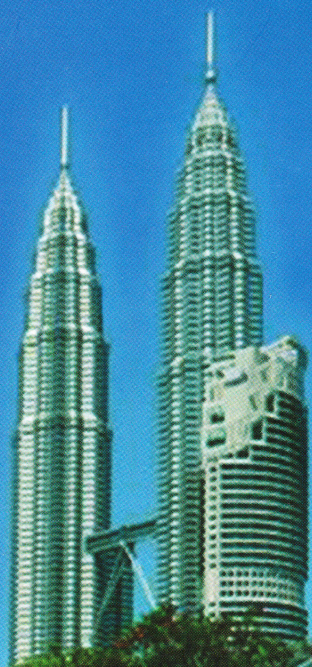
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Paper: PE-23-O

A Decision Making Model to Identify Maintenance Strategies for Small and Medium Industries

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Abstract- Rapid developments in computer science have significantly contributed to the improvement of maintenance practice and organization's competitiveness. Many available computerized maintenance management systems (CMMS) have currently incorporated to a certain extend with a model based decision support capabilities. Among the promising maintenance decision model used, is the Decision Making Grid (DMG) model. However, DMG consider only downtime and frequency of failures of machines as the maintenance strategy deciding factors. In this paper, we propose an improved technique on DMG through incorporating maintenance cost analysis to first identify machines or candidates to be fitted into the DMG. Next, fuzzy logic rules can be formed by combining the factors. Using a rudimentary case study, the improved model is capable of generating more sensible maintenance strategies. For continuous maintenance improvement, we are also proposing the decision making model to embed with CMMS.

Paper: PE-24-O

Development of Pneumatically Actuated Stabilizer Bar to Reduce Unwanted Motion due to Asymmetric Road Disturbances

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Abstract- Asymmetric road disturbances are one of the environmental factors that will affect vehicle ride comfort. This paper proposes a new system that can reduce the unwanted motion due to asymmetric road disturbances using pneumatically actuated active stabilizer bar (PAASB). The simulation was on 7 degree of freedom full car model. The proposed controller consists of 3 controller loops namely attitude control of vehicle body, force tracking control of pneumatic system and disturbance rejection control. The results of the study show that the proposed system is able to reduce the unwanted motion of vehicle pitching and rolling in the presence of asymmetric road disturbances.

Paper: PE-25-O

A Mobile Application Architecture for Measuring Shaft Misalignment

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Abstract- Shaft alignment task is one of the important issues in manufacturing maintenance particularly to personnel who daily facing misalignment problem. The importance increase as shaft alignment needs high accuracy and precise measurement will reduces bearing and seal damage, minimizes energy loss, and reduces production downtime. Thus, in this paper we present an architecture in developing mobile application for shaft alignment that could saves the user the arduous task of using dial gauges. The aim is to solve engineering maintenance problem that runs on a Personal Digital Assistant (PDA) and brings the solution straight to the user's fingertips. This would shorten processing time, provide reliable and better accuracy analysis and as a medium for data sharing thus increase communication level within a manufacturing plant.

Keywords: Shaft Alignment, Mobile Architecture, Mobile Application, Maintenance

Paper: PE-26-P

Thermodynamic Approach to Determine a Gas Turbine Components Design Data and Scaling Method for Performance Map Generation

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Abstract- A major impediment to the development of component-based engine models is the lack of available component data. These data are usually proprietary of the engine manufacturers and the normally available information is scanty. The estimation of the suitable component performance map remains, at best, a difficult task. Where component performance is not available the nearest method, of estimating compressor performance such as the scaling technique, has been used successfully to model the turbine and compressor. In using the scaling technique, the difficulty of simulating an existing gas turbine is lack of design data available to the researcher, as the manufacturer gives only the bare minimum data required for safe operation of the plant. Without design data it is very difficult to mathematically model the plant. Therefore, this study illustrates how to find the design data with the minimum available information using the basic thermodynamic laws and use of scaling method to produce a new detailed performance map from an existing map with their design data.

Keywords: Gas turbine, Performance map, Thermodynamic laws, Scaling method

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